

COUNTY OF ORANGE
PUBLIC FACILITIES & RESOURCES DEPARTMENT

**MANAGEMENT GUIDELINES
FOR THE USE OF FERTILIZERS AND PESTICIDES**

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TABLE OF CONTENTS

Glossary

Executive Summary

1.0 Introduction

- 1.1 Status of Fertilizer and Pesticide Use
- 1.2 Management Options
- 1.3 Definitions

2.0 Fertilizer Management

- 2.1 Identification and Scope of Guidelines
- 2.2 General Considerations
 - 2.2.1 State and Federal Law
 - 2.2.2 General Recommendations
- 2.3 Planning for the Use of Fertilizers
 - 2.3.1 Soil Testing
 - 2.3.2 Application Rates
 - 2.3.3 Timing
- 2.4 Application Methods
 - 2.4.1 Banding of Fertilizer
 - 2.4.2 Foliar Fertilization
 - 2.4.3 Broadcast Application
 - 2.4.4 Fertigation
- 2.5 Storage and Handling of Fertilizers
 - 2.5.1 General Description
 - 2.5.2 Dry Fertilizer
 - 2.5.3 Liquid Fertilizer

3.0 Pesticide Management

- 3.1 Identification and Scope of Guidelines
- 3.2 General Considerations
 - 3.2.1 State and Federal Law
 - 3.2.2 Chemical Labels and Materials Safety Data Sheets (MSDS)
 - 3.2.3 General Recommendations
- 3.3 Planning for the Use of Pesticides
 - 3.3.1 Selection of Appropriate Pesticides
 - 3.3.2 Certification, Licensing and Permitting
 - 3.3.3 Employee Training
 - 3.3.4 Accident Mitigation
 - 3.3.5 Emergency Medical Care
 - 3.3.6 Equipment and Equipment Maintenance
 - 3.3.7 Groundwater and Surface Water Protection

TABLE OF CONTENTS (cont'd)

- 3.4 Application of Pesticides
 - 3.4.1 Supervision
 - 3.4.2 Proper Techniques
 - 3.4.3 User Safety and Protection
- 3.5 Storage, Disposal and Transportation
 - 3.5.1 Proper Storage
 - 3.5.2 Proper Disposal
 - 3.5.3 Safe Transportation Methods
- 4.0 Integrated Pest Management
 - 4.1 Background of IPM
 - 4.2 Scope of Guidelines
 - 4.3 Alternatives to Pesticides

REFERENCES

GLOSSARY

California Code of Regulations, Title 3, Division 6 (3 CCR)

The State of California Code regulating pesticides and pest control operations.

California Fertilizer Association (CFA)

An organization promoting progress in the fertilizer industry in the interest of an efficient and profitable agricultural community. Activities of CFA include developing and disseminating new information to its members and others; supporting production-oriented research programs to identify maximum yield systems for farmers; promoting ergonomic topics at our schools, colleges and universities; and maintaining open communications among the industry, universities and other state and federal agencies.

Chemical Labels

As required by federal law, manufacturers of pesticides must provide chemical labels on the containers of all pesticides distributed. These labels include all necessary information on the chemical constituents of the pesticide, including recommendations and instructions for use, toxicity classification and the appropriate warning statements and emergency procedures in case of acute exposures. As required by state law, labels must be kept in good, readable condition and be attached to all pesticide containers at all times.

Drainage Area Management Plan (DAMP)

A document required under the municipal NPDES stormwater permits issued to the co-permittees by Santa Ana and San Diego Regional Water Quality Control Boards.

Equivalent Training

A term referring to public agency employees dealing with the application of pesticides who have not received a qualified applicator's license (QAL) from the State of California, but who has completed a training course in pesticide application offered by the County of Orange.

Eutrophication

A decrease in dissolved oxygen in a body of water to such an extreme extent that plant life is favored over animal life. For example, a lake that is overgrown in algae on the surface is likely in a state of eutrophication.

Integrated Pest Management

The trend in vegetation management that supports moving away from reliance on pesticides and toward an integrated approach of limited pesticide use with more environmentally friendly pest control techniques.

Maximum Extent Practicable (MEP)

MEP means taking into account equitable considerations of competing factors, including, but not limited to, the gravity of the problem, fiscal feasibility, public health risks, societal concern and social benefit.

GLOSSARY (cont'd)

Materials Data Safety Sheet (MSDS)

Similar to chemical labels and also required by federal law, these sheets should contain all information necessary for the safe handling of pesticides. They include chemical identifications, hazardous ingredients, physical data, fire and explosion data, health hazards, reactivity data, spill or leak cleanup procedures, special protection and special precautions.

National Pollutant Discharge Elimination System (NPDES)

The national program under the Clean Water Act for controlling discharges from point sources directly into Waters of the United States.

Permittee

A permittee to an NPDES permit that is responsible for permit conditions relating to the discharge for which it its operator. As used in the Stormwater Permit Implementation Agreement, permittees are the County of Orange, the 33 cities of Orange County and the Orange County Flood Control District.

Pest Control Advisor (PCA)

Certification obtained from the State of California after demonstrating adequate knowledge of pests, pesticides and the implications of pesticide use. A recommendation for pesticide use must be obtained from a PCA before public agencies may approve any pesticide applications.

Qualified Applicator's License (QAL)

A license obtained from the State of California after demonstrating adequate knowledge of the proper techniques for handling, storing, transporting and applying pesticides. Workers must obtain a QAL before being permitted to apply or supervise application of Category 1 pesticides.

Qualified Fertilizer Specialist

A person designated by the governing public agency who is knowledgeable of the proper techniques for handling, storing, transporting and applying fertilizers as defined in the Management Guidelines for Use of Fertilizers and Pesticides. This person shall be able to sample, inspect, test and make analyses of fertilizers that are in use or being considered for use in the agency's jurisdiction to such an extent to adequately determine their compliance with the management guidelines.

Restricted Materials Permit

A permit that must be acquired by any public agency before application of the pesticides listed as restricted by the State of California in the Code of Regulations ("CCR"), Title 3, Division 6. In Orange County, this permit must be obtained from the County Agricultural Commissioner.

GLOSSARY (cont'd)

State Code

In this report, referring to CCR, Title 3, Division 6, and noted as "3 CCR."

Storm Drain

Pipe or channel structure designed to convey only stormwater runoff for purposes of flood protection. Federal regulations use the term "storm sewer." Use of the word "sewer" for a stormwater conveyance structure should be discouraged, since the word "sewer" also includes sanitary sewers and combined sewers which carry human waste.

Toxicity Classification

The California Department of Food and Agriculture groups pesticides into three categories according to their toxicity or potential to cause injury to people. Category 1 pesticides are the most hazardous and their use is normally restricted, while Category 3 pesticides are the least toxic to people and are generally less hazardous.

EXECUTIVE SUMMARY

This document was prepared to establish guidelines for the management of fertilizers and pesticides. The main objective of these guidelines is to safeguard to "the maximum extent practicable"* against unnecessary discharges of fertilizers and pesticides into surface and groundwater systems and to establish safe and reasonable standards for handling those materials. The guidelines are based on state and federal laws, environmental policies and "best management practices" established by various public and private agencies. Through this document, it is envisaged that these practices will establish a set of uniform standards and procedures.

1.0 INTRODUCTION

1.1 Status of Fertilizer and Pesticide Use

Fertilizers and pesticides are a primary tool of vegetation management. Used properly, fertilizers provide important nutrient supplies for vegetation and agriculture, and pesticides help to protect those resources from potential harm.

Used improperly, fertilizers and pesticides can become an impairment to surface and groundwater supplies. Careless application, mixing, transportation, storage and disposal allow chemicals to enter surface and groundwater through runoff and infiltration; the same handling problems endanger human health through exposure to toxic chemicals; soil degradation often results from overuse and misuse of pesticides and fertilizers. Even under ideal conditions, there is still a high level of risk, and consequently, there is a need for considerable professional planning and management.

1.2 Management Options

Because of the risk involved in using fertilizers and pesticides, the development of management guidelines for use of fertilizers and pesticides is an essential element of the DAMP. These guidelines are designed not only to comply with the NPDES Stormwater Program, but also to minimize any threat to human health and environmental resources from improper use of fertilizers and pesticides. It is envisaged that consideration of these guidelines by the permittees will cause public agencies to re-evaluate their approach to using fertilizers and pesticides and move toward reducing dependence on them.

The guidelines that follow are intended for the use of the Permittees, although they may ultimately be used on a broader scale. They are based on the laws, management guidelines and "best management practices" established by other federal, state and local agencies. They recognize that the safe management of fertilizers and pesticides is a shared responsibility between the field worker and management. These guidelines address the concern for fertilizer and pesticide use at a basic level, and if followed, they should reasonably prevent environmental damage to the highest degree possible.

1.3 Definitions

For the purpose of these guidelines, fertilizers may be referred to as "nutrients" or "soil nutrients," and the term "pesticides" will encompass all herbicides, insecticides, fungicides and rodenticides. The California Food and Agricultural Code and the California Code of Regulations, Title 3 (3 CCR)*, constitute the laws and regulations referenced in this plan. They are referenced often and usually referred to as the "State Code."* Also, Permittees will be referred to as "public agencies," and employees working for these public agencies who handle fertilizers & pesticides will be referred to as "workers" or "public employees."

2.0 FERTILIZER MANAGEMENT

2.1 Definition and Scope of Guidelines

Fertilizers are nutrients applied to soil to provide a better growing environment for plants. The fertilizers most commonly in use in Southern California today are nitrogen- and phosphorus-based. Both leach into soils easily in the presence of water and have become a water quality concern, causing algal blooms and eutrophication* and, in some cases, causing levels to exceed federal drinking water standards.

However, fertilizers also play the important role of promoting vegetation growth that protects soil from erosion and enhances landscape aesthetics. Because there is a necessity for soil nutrients and because there is a potential for adverse effects on local waterways due to the loss of these nutrients through runoff and infiltration, management guidelines are necessary as a means of reducing the loss of fertilizers into water supplies.

2.2 General Considerations

2.2.1 State and Federal Law

Because most fertilizers are not as toxic as pesticides, state and federal lawmakers have not developed regulations for their use. Fertilizers are not usually considered an immediate danger to public health or safety. However, the California Fertilizer Association (CFA)*, a Sacramento-based organization, has developed complete management guidelines for fertilizer use and the State Department of Food and Agriculture has recommendations for use of nitrate-based fertilizers, both of which are available for consultation.

2.2.2 General Recommendations

1. Public agencies should periodically have soils tested before applying fertilizers to be certain that application is appropriate for and compatible with soil conditions. The samples should be analyzed by a qualified specialist for fertilizer applications*, and workers should follow the recommendations.
2. Public agencies should choose to use organic fertilizers such as compost, peat and mulch wherever possible to increase soil porosity and water retention.
3. Workers should apply only the minimum amount of fertilizer needed and incorporate it directly into the soil around the plant, where possible, to minimize potential surface runoff.
4. Workers should not apply fertilizers in the rain or on the same day that rain is expected.
5. Workers should immediately cleanup any spill of fertilizers.

6. Storage facilities should be covered and have impermeable foundations so that potential spills don't have the opportunity to runoff into surface water or leach into groundwater systems.
7. Fertilizers that may be carried by the wind should be stored in areas away from open loading spaces and entrances of storage warehouses.
8. Fertilizers should be securely covered in the vehicle before being taken to application sites so that none can spill or fly out during transport.
9. Use slow release fertilizers -- such as water soluble nitrogen fertilizers, coated fertilizers and fertilizers of limited solubility -- whenever possible to minimize the possibility of leaching.

2.3 Planning for Use of Fertilizers

2.3.1 Soil Testing

Most fertilizers travel quickly through water. Therefore, fertilizers will leach through soil and potentially contaminate groundwater more quickly after excess watering or irrigation, after heavy rains and where the water table is high. For this reason, soil testing is an important management technique to determine the safest fertilizer application rate.

The California Landscape Contractors Association (CLCA) has a complete list of organizations in Southern California that offer soil testing and analyzing for fertilizer use. To get a copy of that list, CLCA can be contacted at (916) 448-2522. If a reliable soil analyst is not already known, it is advisable for public agencies to consult CLCA and research a specialist who can make recommendations for fertilizer use.

2.3.2 Application Rates

The amount of fertilizer needed for different applications depends on a number of factors. For specific recommendations, a qualified specialist should be consulted. The following are some factors to be considered:

- The vegetation's ability to use fertilizer;
- The amount of nutrients already in the soil, including fertilizer that may still be present from a previous application;
- The amount of soil nutrients that will or can be obtained from natural processes;
- The expected loss of nutrients from the soil; and
- The temperature at the time of application.

2.3.3 Timing

For vegetation with different growth patterns, fertilizers should be applied at different times and in different quantities. The vegetation being managed should be researched and fertilizers applied only according to the amounts and at the time intervals recommended by a qualified specialist for fertilizer applications. This should minimize the waste of fertilizer and reduce any risk of water contamination.

2.4 Application Methods of Fertilizers

This section details the most common methods for application of fertilizers. These are not the only acceptable methods of fertilizer application. Every application has its own circumstances and variables to consider. A qualified fertilizer specialist should be consulted to recommend the most appropriate application method.

2.4.1 Banding of Fertilizer

Probably the most common and safest application method, this involves physically working small amounts of fertilizer into the soil in a band beneath and around the sides of a seed. It allows new roots to efficiently use the nutrients and minimizes potential nutrient loss to surface runoff. However, given the labor involved, banding may not be practical for most public agency fertilizer applications.

2.4.2 Foliar Fertilization

This is fertilizer applied in solution form that is absorbed through leaves and stems. The method can reduce nutrient leaching into the soil when applied correctly and can be performed at the same time as pesticides application to avoid spraying twice. In this case, the guidelines for pesticide applications must also apply.

2.4.3 Broadcast Application

By this method, dry or liquid fertilizer is uniformly spread over the soil surface. This is often done mechanically, an example being the "drop spreader" which is usually an inverted triangle hopper. The simplest of mechanical applicators, the drop spreader is commonly mounted on wheels and pushed by hand or pulled by vehicle to drop fertilizer out of the bottom of the triangle.

Other types of broadcast applicators include spray booms for liquid fertilization or "spinning disks" mounted on a moving vehicle that throw dry fertilizer into the air. It should be noted that these latter methods do not offer much control over fertilizer drift in adverse weather conditions.

2.4.4 Fertigation

Although not likely to be used by public agencies for fertilizer applications, this method is common among Californian farmers who incorporate fertilizers into irrigation water. The potential for nutrient leaching using this method, though, appears to be high.

2.5 Storage and Handling of Fertilizers

2.5.1 General Description

When stored and handled properly, fertilizers present no hazard to the users' health. Public employees responsible for the storage and handling of fertilizers should be aware that some fertilizers have properties that can result in dangerous chemical reactions if mixed with other substances or under unusual circumstances. For example, ammonium nitrate may become explosive if it becomes mixed in diesel fuel; a dehumidifier may be necessary for storage areas where sensitive fertilizers are stored. Also, because most fertilizers tend to be corrosive, concrete structures are preferred for fertilizer storage facilities.

2.5.2 Dry Fertilizer

In most cases, dry fertilizers are safe to store, transport and handle. However, because some fertilizers have unique, potentially dangerous properties, it is advisable for public agencies to consult a qualified fertilizer specialist for the safest storage and handling procedures for specific fertilizers.

2.5.3 Liquid Fertilizer

Fertilizers in liquid form are potentially more hazardous than dry fertilizer. Public employees responsible for storage and handling need to be aware of the specific properties of each liquid fertilizer in use, including corrosivity and tolerable temperature and pressure ranges. Protective equipment may be necessary for workers handling fertilizers such as sulfuric or phosphoric acid. A qualified fertilizer specialist should be consulted for recommending the safest handling and storage procedures for specific liquid fertilizers.

3.0 PESTICIDE MANAGEMENT

3.1 Definition and Scope of Guidelines

Pesticides are designed to kill or restrict the growth of plants and organisms, and thus, are potentially dangerous chemicals. Increasing scientific concern for their safe use and heightened public awareness of health concerns has led to more and more regulations in the United States at both the state and federal level. Pesticide use by public agencies often involves applications to keep flood control channels and roadways clear or to minimize health and safety hazards of disease-bearing rodents and insects. Any of these applications can drain into stormwater basins if not controlled properly. Although safety concerns and the cost of complying with new regulations have encouraged some public agencies to cut back on the use of pesticides, use is still common, and their management is therefore essential.

3.2 General Considerations

3.2.1 State and Federal Law

The California Department of Food and Agriculture and the federal Toxic Substances Control Act (TSCA) have set forth extensive rules and regulations that must be met by all public agencies. At an absolute minimum, public agencies must comply with these laws or be subject to the penalties described in the statutes.

3.2.2 Chemical Labels and Materials Safety Data Sheets (MSDS)

1. Without exception, chemical labels* provided by the manufacturer of each pesticide are the first source of recommendations and instructions for chemical use. Whenever a chemical is to be used by a worker or a contractor of a public agency, the user needs to be intimately familiar with the label instructions and requirements.

As described in the State Code (Ch. 2, Subch. 1, Art. 10), the label must appear on the immediate container of the chemical and include, in prominent, bold type, the appropriate warning or caution statement according to its toxicity classification*. If a chemical is transferred to another container, a copy of the label should be transferred with it.

Workers should never handle a container that doesn't have a warning label attached, and the supervisor in charge should be immediately advised of the situation. If a label is badly damaged, the supervisor should replace it.

2. Workers using pesticides should have readily available the Materials Safety Data Sheets (MSDS)* for each chemical they are using. Although the MSDS is a form that may vary in appearance for different chemicals, the information is the same, as required by law. Similar to the chemical labels, these sheets contain information necessary to handle each chemical safely, and all workers should be familiar with the information.

MSDS sheets include chemical identifications, hazardous ingredients, physical data, fire and explosion data, health hazards, reactivity data, spill or leak cleanup procedures, special protection and special precautions.

3.2.3 General Recommendations

1. Public agencies should maintain a complete list of all chemicals and their uses.
2. Public agencies should thoroughly investigate and consider all alternatives to pesticide use.
3. Workers should use pesticides only according to label instructions.
4. Work crews should bring to the work site only the amount of chemical to be used during the application and use only the minimum amount the chemical necessary.
5. Workers should consider weather conditions that could affect application (for example, they shouldn't spray when winds are exceeding 5 mph, when raining or when rain is likely).
6. Workers should consider area drainage patterns (for example, they shouldn't apply near wetlands, streams and lakes or ponds unless it is for an approved maintenance activity).
7. Workers should consider soil conditions before applying pesticides (for example, they shouldn't apply to bare or eroded ground).
8. Workers should triple-rinse empty pesticide containers before disposal and use the leftover wash as spray.
9. Workers should never clean or rinse pesticide equipment and containers in the vicinity of storm drains*.
10. Pesticides should only be stored in areas with cement floors and in areas insulated from temperature extremes.
11. Workers should secure chemicals and equipment during transportation to prevent tipping or excess jarring in apart of the vehicle completely isolated from people, food and clothing.

12. Workers or their supervisors should inspect pesticide equipment, storage containers and transportation vehicles daily.
13. Public agencies should adopt a plan for dealing with potential accidents before they happen.
14. Workers should immediately clean up any chemical spill according to label instructions and notify the appropriate supervisors and agencies.

3.3 Planning for Use of Pesticides

3.3.1 Selection of Appropriate Pesticides

1. Pesticides are to be used only after recommendation from a state-licensed or certified pest control advisor.
2. Public agencies should also seek advice for appropriate pesticide use from the Orange County Agricultural Commission, from other professional pesticide handlers and/or through professional publications. The County Agricultural Commission can be contacted at (714) 447-7100.
3. A special effort should be made to limit use of restricted pesticides and all other Category One pesticides.

3.3.2 Certification, Licensing and Permitting

1. Pesticides are only to be applied by or under the direct supervision of an individual with a qualified applicators license (QAL)* for pesticide applications or by workers with equivalent training*.
2. Chemicals listed as "restricted" in the State of California may be used only under a restricted materials permit* (StateCode Ch. 2, Subch. 4) to be issued by the Orange County Agricultural Commission. The permit must be renewed annually for continued use. For more information, contact the Commission at (714) 447-7100.
3. All other guidelines concerning permits, licensing and certification requirements to be followed before pesticide application are detailed in the State Code, Chapter 3, Subchapter 1.

3.3.3 Employee Training

1. Public agency employees must know the information on the chemical label and its MSDS before using pesticides in any capacity. In addition, they should (a) know the immediate and long-term health hazards posed by chemicals to be used, the common symptoms of chemical poisoning and the ways poisoning could occur, and (b) know the safe work practices to be followed, including the appropriate protective clothing, equipment, mixing, transportation, storage, disposal and spill cleanup procedures that apply to the specific chemicals being used.
2. In addition to the training and annual continuing education required for licensing and certification (3 CCR, Ch. 3, Subch.3, Art. 2), public employees are encouraged to participate in continuing pesticide education programs whenever the programs are available.

3.3.4 Accident Mitigation

Public agencies using pesticides should have plans for dealing with potential accidents before they happen. These plans should consider:

1. Labels and MSDS Sheets -- All workers handling pesticides must be familiar with these instructions. The steps for accident mitigation are spelled out on chemical labels and MSDS sheets.
2. Spill Cleanup Kits -- Any time pesticides are being handled, there should be a cleanup kit on hand in case of an accident. This means there should always be a cleanup kit located in pesticide storage areas, on vehicles used to transport pesticides and on location where the chemicals are being applied. Although these kits may vary in what they contain depending on the chemical type and the situation, at a minimum they should include:
 - spill-control procedures
 - a five gallon drum with sealable lid
 - a dust pan and broom
 - a squeegee
 - a shovel
 - protective goggles, gloves, boots, coveralls
 - a tarp (for covering dry spills)
 - detergent and water (check label or MSDS for proper use)
 - barricade tape, florescent traffic safety cones or string to cordon off an area
 - large sponges, containment booms or some other absorbent material

3. Cleanup Procedures -- Spilled pesticides must be prevented from entering the local surface and/or groundwater supplies. Specific recommendations for spill cleanup should be available on each chemical label or MSDS. Specific recommendations for the sequence of procedures may also vary depending on the situation. However, generally, in case of a spill, the responsible worker(s) should:

EVALUATE the accident and quickly determine the most immediate concerns (medical and/or environmental).

CONTAIN OR CONTROL the spill.

NOTIFY the supervisor in charge who should, in turn, notify the proper authorities. If contact cannot be made, dial 911.

ISOLATE the area with fluorescent traffic safety cones, ropes or some other cordoning device to be sure that no one walks, wanders or drives through the spill area.

CLEAN UP the spill as best as possible following label instructions and using the appropriate spill cleanup kit.

EVALUATE any damage that may have occurred resulting from the spill (property damage, health damage, equipment damage, etc.) and make notes on all relevant details and circumstances before leaving the scene.

PREPARE A COMPLETE REPORT detailing the incident immediately after leaving the scene upon returning to the work place and submit it to the immediate supervisor.

3.3.5 Emergency Medical Care

Accident situations requiring emergency medical care are likely to involve acute exposure to potentially toxic chemicals. Instructions for handling these exposures appear on the chemical label. Workers should:

1. Be aware of the symptoms of acute exposures for each chemical being used.
2. Have a predetermined strategy for dealing with exposure scenarios, including knowing (a) the label recommendations for dealing with acute exposures and (b) the nearest medical facility where emergency care is available.

3.3.6 Equipment and Equipment Maintenance

All equipment for the handling of pesticides should be inspected and cleaned by workers before each use to ensure that there are no problems that could lead to chemical leaks, spills or accidents during the day's work (State Code Ch. 3, Subch. 3, Art. 2).

3.3.7 Groundwater and Surface Water Protection

Similar to the discussion of leaching in fertilizer management, the main factors determining the rate at which pesticides enter groundwater and surface water systems are chemical mobility, solubility and persistence and the soil type. For example, potentially dangerous chemicals are likely to have a high solubility and an extremely long half-life, and they are not likely to be easily absorbed into the soil. Therefore, chemicals that decompose rapidly may be preferred. However, note that to choose a chemical that may need to be applied two or three times as often may not make sense from a transportation and application risk standpoint.

Because of these factors, regardless of the category of chemicals being used, pesticide advisors should always test the soil for compatibility with specific chemicals before recommending pesticides for a specific area.

Furthermore, because the effect of these uses is not always immediately apparent, public agencies should periodically test areas that could be particularly vulnerable to contamination or deterioration. The results of these tests should be kept on public record.

3.4 Application of Pesticides

3.4.1 Supervision

1. In cases where supervision of pesticide applications is required by the State Code, supervision must be handled by a state-licensed or certified pesticide applicator. For all other pesticide applications, supervision may be handled by workers with equivalent training.
2. Public agencies that contract pesticide applications should periodically inspect contracted work crews to be certain that contractors are following proper management guidelines. Public agencies handling their own applications should likewise inspect their work crews on a regular basis to ensure that safety standards are being met.

3.4.2 Proper Techniques

1. Read the label carefully and follow application instructions exactly. Be absolutely certain that the right chemical is being used for the right job before applying.
2. To prevent potentially harmful runoff, only the absolute minimum amount of pesticides should be used to ensure vegetation safety.
3. Recommendations for best weather conditions to prevent pesticide spray drift are outlined in State Code Chapter 2, Subchapter 4, Article 2.

3.4.3 User Safety and Protection

1. Public agencies should have on hand equipment for application of pesticides should include eye protection, gloves, respiratory gear and impervious full-body, chemical resistant clothing when called for by the chemical label.
2. Even when wearing respiratory gear or masks, when dealing with spray applications of pesticides, workers should avoid directly inhaling in the spray mist.
3. Workers should avoid working alone, especially at night.
4. Workers should clean equipment, clothing and self thoroughly after each application.
5. State laws regarding re-entry into fields that have recently been treated with pesticides should be followed (State Code Chapter 3, Subchapter 3, Article 3).
6. Public agencies are responsible for knowing and informing workers about the specific pesticides being used including how they are properly handled, the dangers involved and the proper training and safety procedures.
7. Public agencies are responsible for keeping updated records and a complete list of the pesticides being used in their jurisdiction. This should include the chemicals, amount in storage, amount of applications, dates and location of applications and pests controlled with each application.
8. Public agencies should keep all relevant label and MSDS information for each chemical updated and readily available at all times to workers handling the materials.

3.5 Storage, Disposal and Transportation

3.5.1 Proper Storage

1. Storage areas should be away from living areas and in a covered area that is well-insulated from temperature extremes; they should have a cement floor and good ventilation. Also, storage areas should be clearly marked according to state standards and be securely locked at all times when not in use.
2. Public agencies should ensure that chemical labels on pesticides being stored or used are kept in good condition and attached to all containers holding pesticides (State Code Ch. 3, Subch. 2, Art. 4).
3. Workers should ensure that storage equipment and containers are inspected daily for leaks or defects before being taken on the job. Containers should also be inspected and before storing at the end of the day.

3.5.2 Proper Disposal

1. Workers should make certain that chemical containers are triple-rinsed before disposal (State Code Ch. 3, Subch. 2)
2. It is recommended that cleaned containers be sent back to the manufacturer for recycling whenever possible. However, once triple-rinsed, most haulers will take them to most landfills.
3. Workers should use left over rinse water as spray.
4. Public agencies should ensure that surplus or out-of-date chemicals are given to a licensed hazardous waste hauler for disposal.

3.5.3 Safe Transportation Methods

1. Workers should ensure that all pesticides containers are tightly sealed and secured from tipping or excess jarring (State Code Ch. 3, Subch. 2, Art. 4).
2. Transportation compartments on vehicles should be isolated from the compartment carrying people, food and clothing and should be securely locked (State Code Ch. 3, Subch. 2, Art. 4).
3. Workers should transport only the amount of pesticide needed for the day to the site.
4. Workers should be certain that the appropriate chemical labels and MSDS sheets, a spill cleanup kit, the location of emergency medical care and a first aid kit are always brought along when transporting pesticides.

5. Public agencies should encourage all vehicles used for pesticide transportation to include radio communications for contacting help in case of a spill or some other emergency.

4.0 INTEGRATED PEST MANAGEMENT*

4.1 Background on Pesticide Use

For most of the last 50 years, the trend in vegetation management has been toward a greater reliance on pesticides. The result has been not only a tremendous increase in the use of many dangerous chemicals, but also an enormous increase in the number of pests that are resistant to the pesticides being produced. In essence, as more pesticides have been produced, more resistant strains of pests have evolved. Worse, recent studies have shown that the end result of this global trend has been no net gain in vegetation survival rates.

With these realizations becoming well known, vegetation managers are now moving away from their reliance on pesticides and toward an integrated approach that combines limited pesticides use with more environmentally-friendly pest control techniques.

4.2 Scope of Guidelines

For public agencies in Orange County, IPM practices should be preferred to the sole use of pesticides as the primary means of vegetation management. These techniques are designed to prevent overuse and to reduce reliance on them. IPM should be considered by all public agencies or their contractors before intensive use of pesticides.

The goal of IPM is not to eliminate all pests, but to keep their populations at a manageable number. Pesticides are part of IPM techniques, but they are used in small quantities and only after all other alternatives have been reviewed.

4.3 Alternatives to Pesticides

Some of the alternatives to pesticides that may be considered as part of an IPM program include:

1. Introduction of natural predators such as ladybugs, lacewings, garter snakes and toads. Also, some bacteria, viruses and insect parasites may be preferable to pesticides.
2. Selected removal or rotation of vegetation habitat to eliminate the breeding places of specific pests.
3. Weeding, hoeing and trapping manually. Pruning and thinning of trees is also an effective means of preventing epidemic tree insects and diseases.

Also, at certain times of the year and under certain environmental conditions, certain pests can be expected. Therefore, timely planting or well-timed use of small quantities of pesticides may avoid the need for some chemical use.

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